SGaan Kinghlas: Bowie Seamount At-sea Observer Coral and Sponge – Sample Collection, May 2015

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SGAAN KINGHLAS - BOWIE SEAMOUNT AT-SEA OBSERVER CORAL AND SPONGE SAMPLE COLLECTION, MAY 2015.

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ABSTRACT

Buchanan, S., H. Gartner and A. Keizer. 2017. SGaan Kinghlas - Bowie Seamount At-sea Observer Coral and Sponge Sample Collection, May 2015. Can. Data Rep. Fish. Aquat. Sci. 1273: iv + 18 p.

In 2015, recent management measures for the Sablefish fishery within the SGaan Kinghlas-Bowie Seamount Marine Protected Area (SK-B MPA) required an at-sea observer for fishing activities during a May fishing trip. This document summarizes the results of at-sea observer sample and data collection activities on board the F/V *Pacific Viking* between May 3 and May 29, 2015. This document details the results of the collection of coral and sponge bycatch in accordance with the Interim SGaan Kinghlas-Bowie Seamount Observer Coral and Sponge Data Collection Requirements. The at-sea observer reported sponges were caught on 11 occasions; corals were caught 16 times during the 70 fishing events. The catches were comprised of six unique species of sponge and six unique species of coral that were confirmed from samples and photographs collected by the at-sea observer and detailed in this report.

RÉSUMÉ

Buchanan, S.B, Frey M. et Keizer A. 2017. Prélèvement d'échantillons de coraux et d'éponges par le programme des observateurs en mer au mont sous-marin Bowie (SGaan Kinghlas). mai 2015. Rapp. stat. can. sci. halieut. aquat. 1273 : iv + 19p.

En 2015, de nouvelles mesures de gestion relatives à la pêche à la morue charbonnière dans la zone de protection marine du mont sous-marin Bowie (ZPM du SGaan Kinghlas) exigeaient qu'un programme d'observateur en mer soit mis sur pied pour surveiller les activités de pêche ayant lieu durant un voyage particulier au mois de mai. Le présent document résume les résultats des prélèvements d'échantillons et de données qui ont été effectués dans le cadre du programme d'observateur en mer sur le navire de pêche Pacific Viking, du 3er au 29 mai 2015. Le présent document offre des détails sur les résultats du prélèvement de prises accessoires de coraux et d'éponges, conformément aux exigences provisoires relatives au prélèvement de données sur les coraux et les éponges dans le cadre du programme d'observateur au mont Bowie (SGaan Kinghlas). Le programme d'observateur en mer a déterminé qu'au cours des 70 sorties de pêche, des éponges ont été capturées à 11 reprises et des coraux à 16 reprises. Six espèces particulières d'éponges et six espèces particulières de coraux ont été capturées; ces espèces sont décrites en détail dans le présent rapport.

1.0 INTRODUCTION

In 2014 new management measures for the Sablefish fishery within the SGaan Kinghlas-Bowie Seamount Marine Protected Area (SK-B MPA) were introduced. Fishery management measures include the requirement to carry an at-sea observer during sablefish (*Anoplopoma fimbria*) fishing activities to collect catch information, biological samples, and to facilitate the deployment of deepwater cameras and accelerometers. In addition to collecting biological information about sablefish, new management measures required the collection of coral and sponge bycatch.

Sablefish fishing in the "Northern Seamount Fishery Area", including SK-B MPA, was conducted between May 3, 2015 and May 29, 2015 by the fishing vessel (F/V) *Pacific Viking*. Fishing was permitted during May 2015 under the authority of amended conditions of 2015/2016 Sablefish licence, issued by Fisheries and Oceans Canada (DFO). A licence issued under the authority of section 52 of the Fishery (General) Regulations permitted the retention of coral and sponge samples. At-sea observer sample and data collection requirements were completed by a DFO-certified groundfish observer employed by Archipelago Marine Research Ltd. (Archipelago). At-sea observer services were funded by Wild Canadian Sablefish Ltd. (WCS).

2.0 METHODS

During the F/V *Pacific Viking*'s May trip to the Northern Seamount Fishery Area the at-sea observer was tasked with collecting catch data and bridge log data, and was responsible for coordinating the deployment and retrieval of the deepwater cameras, accelerometers, and temperature/depth recorders. The at-sea observer collected catch information, including the weight and number of pieces of each species encountered, and whether the catch was retained or released at-sea. The at-sea observer collected detailed bridge log data using the vessel's navigational instruments for each fishing event. Bridge log data included fishing location information, fishing time, bait used, and a description of the fishing gear deployed. The deployment and retrieval of the deepwater cameras, accelerometers, and temperature/depth recorders, was done in accordance with DFO guidelines. Detailed bridge log and catch information for each fishing event were submitted to DFO's Fishery Operations System (FOS). Data are available in FOS under trip number 28473.

Biological data was collected by the at-sea observer throughout the trip according to a sampling protocol and schedule established for the Northern Seamount Fishery Area by DFO. Samples collected by the at-sea observer included length/sex/maturity/age (LSMA) data, and DNA tissue samples from sablefish, Rougheye rockfish (*Sebastes aleutianus*), and Blackspotted rockfish (*Sebastes melanostictus*).The sampling protocol also required some sablefish to be measured, tagged and released to sea. Previously tagged sablefish encountered in the catch were sampled for length/sex/maturity/age data, and the tag number was recorded.

2.1 AT-SEA OBSERVER CORAL AND SPONGE CATCH REPORTING AND SAMPLE COLLECTION

The at-sea observer deployed during the May fishing activity in the Northern Seamount Fishery Area collected coral and sponge bycatch in accordance with the Interim SGaan Kinghlas-Bowie Seamount Observer Coral and Sponge Data Collection Requirements ("Data Collection Requirements") (Buchanan et. al., 2015).

For the purpose of documenting sponge and coral encountered during fishing activity on SGaan Kinghlas – Bowie Seamount sponge and coral were defined as:

- Phylum Porifera (Sponges): inclusive of organisms belonging to Class Calcarea (Calcareous sponges); Class Hexactinellida (Glass sponges); or Class Demospongiae (Bath sponges).
- Phylum Cnidaria (Corals): inclusive of organisms belonging to Order Antipatharia (Black corals); Order Scleractinia (Cup corals); Order Pennatulacea (Sea pens and whips); Suborder Alcyoniina (Soft corals); Suborder Scleraxonia (Bone-like corals) including Family Paragorgiidae (Bubblegum corals) and Family Plexauridae (Horny tree corals); Family Stylasteridae (Hydrocorals); Family Isididae (Bamboo corals); or Family Primnoidae (Red-tree corals).

The at-sea observer reported all catches of coral and sponge to the lowest possible taxonomic level that was practical based on the tools, identification support materials, and time available. Each coral and sponge catch record was reported by pieces and weight (wet weight to the nearest 1 pound), with catches less than 0.5 pounds reported as a trace quantity. Coral and sponge samples were collected where possible, without interfering with other duties required for the collection of catch and effort data, groundfish biological samples, and the deployment and retrieval of trap cameras and accelerometers.

As defined by the Data Collection Requirements, the at-sea observer collected samples of each unique coral and sponge species encountered to allow for subsequent species identification or verification. Specimens were individually frozen in a re-sealable zipper storage bag, with a pre-completed waterproof label containing trip identification information. Each sample collected was inventoried on a Coral and Sponge Sample Summary worksheet. If the sample was small (<20-30 cm), the entire organism/colony was retained. For larger specimens, a 20-30 cm section of the organism/colony was retained. Attention was paid to retain a section of the specimen that included those features important to its identification. When a coral or sponge was encountered in smaller fragments, a sample of the fragments was collected together, provided that the fragments were large enough to allow for its subsequent identification. The at-sea observer also collected photographs of corals and sponges encountered according to the Data Collection Requirements. Sample and photo collection was completed once for each unique species encountered during the trip. Where possible, photographs included a ruler for measurement purposes and a label referencing the photograph to the catch record and fishing event. Photographs included a picture of the entire organism or colony, as well as close up photos of the key identification features. Each series of photographs collected for each species of coral or sponge was inventoried on a Coral and Sponge Sample Summary worksheet.

All coral and sponge samples and photographs were submitted to Archipelago, along with the at-sea observer trip report and data package. Particular care was taken to ensure that frozen samples remained frozen during delivery. Coral and sponge samples were examined by staff at Archipelago and the Royal British Columbia Museum (RBCM). At the RBCM, all submitted specimens of corals and sponge were further examined using a dissecting and a compound microscope. The specimens were identified on the basis of diagnostic characters, unique to each species as defined in the primary literature. Further descriptions and references are contained in Figures 1-12. All samples submitted were then preserved in 70% ethanol and incorporated into the invertebrate collection at the RBCM for future reference.

2.2 FISHING ACTIVITY AND SAMPLE COLLECTION

The F/V *Pacific Viking* completed 70 fishing events in the Northern Seamount Fishery Area between May 3, 2015 and May 29, 2015. Fishing activities conducted by the vessel targeted sablefish using traps. Deepwater cameras, accelerometers and temperature/depth recorders were deployed by the at-sea observer and vessel crew. The at-sea observer collected LSMA data from 86 individual sablefish, as well as tissue samples for DNA from 43 sablefish. The at-sea observer also collected LSMA data from 277 individual Rougheye rockfish/Blackspotted rockfish in addition to DNA tissue samples from 236 individuals. A sample of 110 sablefish captured during the trip were tagged and released while 18 previously tagged sablefish that were captured were sampled on board. All biological data were provided to DFO science staff for inclusion in the Pacific region groundfish science data system (GFBio).

The at-sea observer reported that sponges were caught on 11 occasions; corals were caught 16 times during the 70 fishing events. The catches were comprised of five unique species of sponge and six unique species of coral that could be confirmed from samples and photographs submitted by the observer. All coral and sponge catch records are summarized in Table 1. Coral and sponge samples that were provided to the RBCM for further identification are summarized in Table 2. The at-sea observer submitted photographs of corals and sponges encountered during the trip including those where samples were collected (Figures 1-12).

3.0 RESULTS AND DISCUSSION

This coral and sponge collection and identification protocol implemented in May 2014 and repeated in May 2015, is the first formal process to identify corals and sponges caught in the Zone 2 of the SK-B-MPA as part of modern commercial seamount fisheries. Previous coral and sponge sample collection activities were performed in an opportunistic fashion during at-sea observer assignments. The at-sea observer on the May 2015 trip successfully completed the Interim SGaan Kinghlas-Bowie Seamount Observer Coral and Sponge Data Collection Requirements. The photographs and samples collected were sufficient to allow staff at Archipelago and the RBCM to confirm the identification of each sample. Freezing samples allowed for subsequent identification and preservation of the collected specimens. For the purpose of guiding effective sample and data collection, the Interim SGaan Kinghlas-Bowie Seamount Observer Coral and Sponge Data Collection Requirements do not require procedural changes. As management measures evolve in response to fishery and conservation objectives,

the Data Collection Requirements should be reviewed to ensure that the procedures continue to collect the information required for management.

4.0 ACKNOWLEDGEMENTS

Wild Canadian Sablefish Ltd. is recognized for organizing and funding the sample collection activities and the ongoing science activities at SGaan Kinghlas-Bowie Seamount. The skipper and crew of the F/V *Pacific Viking* are recognized for their assistance with the science activities and sample collection work completed by the at-sea observer during the May 2015 North sablefish seamount trip. Fisheries and Oceans Canada funded the sample processing and reporting activities associated with this project. The Royal BC museum dedicated the staff time and resources required to preserve and identify each sample collected for this work.

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TABLE 1: Summary of coral and sponge catch from May 2015 Sablefish fishing activity at SGaan Kinghlas-Bowie Seamount. Samples were retained under the authority of section 52 of the Fishery (General) Regulations by the at-sea observer onboard the fishing vessel *Pacific Viking*.

Table 1: Summary of coral and sponge catch

Fishing Event Number	Haul Date	Common Name	Latin Name	Catch Weight (kg)	Frozen Sample Retained
10	May 6, 2015	Glass Sponge	*Aulosaccus schulzei*	Trace	Y
23	May 12, 2015	Sea Fan	*Parastenella sp.*	0.5	N
32	May 16, 2015	Sea Fan	*Parastenella ramosa*	Trace	N
35	May 16, 2015	Bubblegum Coral	*Paragorgia sp.*	0.7	N
43	May 18, 2015	Bamboo Coral	*Isidella sp.*	0.5	Y
43	May 18, 2015	Glass Sponge	Hexactinellida	Trace	Y
43	May 18, 2015	Sea Fan	*Parastenella sp.*	Trace	N
44	May 18, 2015	Glass Sponge	*Rhabdocalyptus dawsoni*	Trace	Y
52	May 24, 2015	Sea Fan	*Parastenella sp.*	0.5	N
56	May 26, 2015	Sea Fan	*Parastenella sp.*	Trace	Y
56	May 26, 2015	Glass Sponge	*Aphrocallistes vastus*	Trace	Y
56	May 26, 2015	Glass Sponge	Hexactinellida	Trace	N
56	May 26, 2015	Glass Sponge	*Farrea aspondya*	Trace	N
57	May 26, 2015	Sea Fan	*Parastenella ramosa*	Trace	Y
57	May 26, 2015	Carnivorous Sponge	*Asbestopluma sp.*	Trace	Y
58	May 26, 2015	Sea Fan	*Parastenella sp.*	Trace	N
61	May 28, 2015	Sponge	Porifera	Trace	N
61	May 28, 2015	Sea Fan	*Parastenella sp.*	0.5	N
61	May 28, 2015	Black Coral	*Parantipathes sp.*	Trace	N
62	May 28, 2015	Black Coral	*Parantipathes sp.*	Trace	Y
62	May 28, 2015	Glass Sponge	Hexactinellida	Trace	N
62	May 28, 2015	Sea Fan	*Parastenella sp.*	Trace	N
66	May 29, 2015	Glass Sponge	*Farrea aspondya*	Trace	Y
66	May 29, 2015	Glass Sponge	Hexactinellida	Trace	N
66	May 29, 2015	Sea Fan	*Swiftia simplex*	Trace	Y
66	May 29, 2015	Sea Fan	*Parastenella ramosa*	0.7	N
70	May 29, 2015	Red Tree Coral	*Primnoa pacifica*	2.3	Y

TABLE 2: Coral and sponge samples from May 2015 Sablefish fishing activity provided to the Royal British Columbia Museum for identification. Samples were collected by the at-sea observer onboard the fishing vessel *Pacific Viking* during fishing activities at SGaan Kinghlas-Bowie Seamount.

Table 2: Coral and sponge samples

Fishing Event Number	Haul Date	Common Name	Latin Name	RBCM Catalogue Number	Report Figure
10	May 6, 2015	Glass Sponge	*Aulosaccus schulzei*	016-00045-001	Figure 7.
43	May 20, 2015	Bamboo Coral	*Isidella sp.*	016-00046-001	Figure 1.
43	May 18, 2015	Glass Sponge	Hexactinellida	N/A	Figure 8.
44	May 18, 2015	Glass Sponge	*Rhabdocalyptus dawsoni*	016-00047-001	Figure 9.
56	May 26, 2015	Sea Fan	*Parastenella sp.*	016-00048-002	Figure 2.
56	May 26, 2015	Glass Sponge	*Aphrocallistes vastus*	016-00048-001	Figure 10.
57	May 26, 2015	Sea Fan	*Parastenella ramosa*	016-00049-002	Figure 3.
57	May 26, 2015	Carnivorous Sponge	*Asbestopluma sp.*	01600049-001	Figure 11.
62	May 28, 2015	Black Coral	*Parantipathes sp.*	016-00050-001	Figure 4.
66	May 29, 2015	Glass Sponge	*Farrea aspondyla*	016-00051-001	Figure 12.
66	May 29, 2015	Sea Fan	*Swiftia simplex*	016-00051-002	Figure 5.
70	May 29, 2015	Red Tree Coral	*Primnoa pacifica*	016-00052-001	Figure 6.

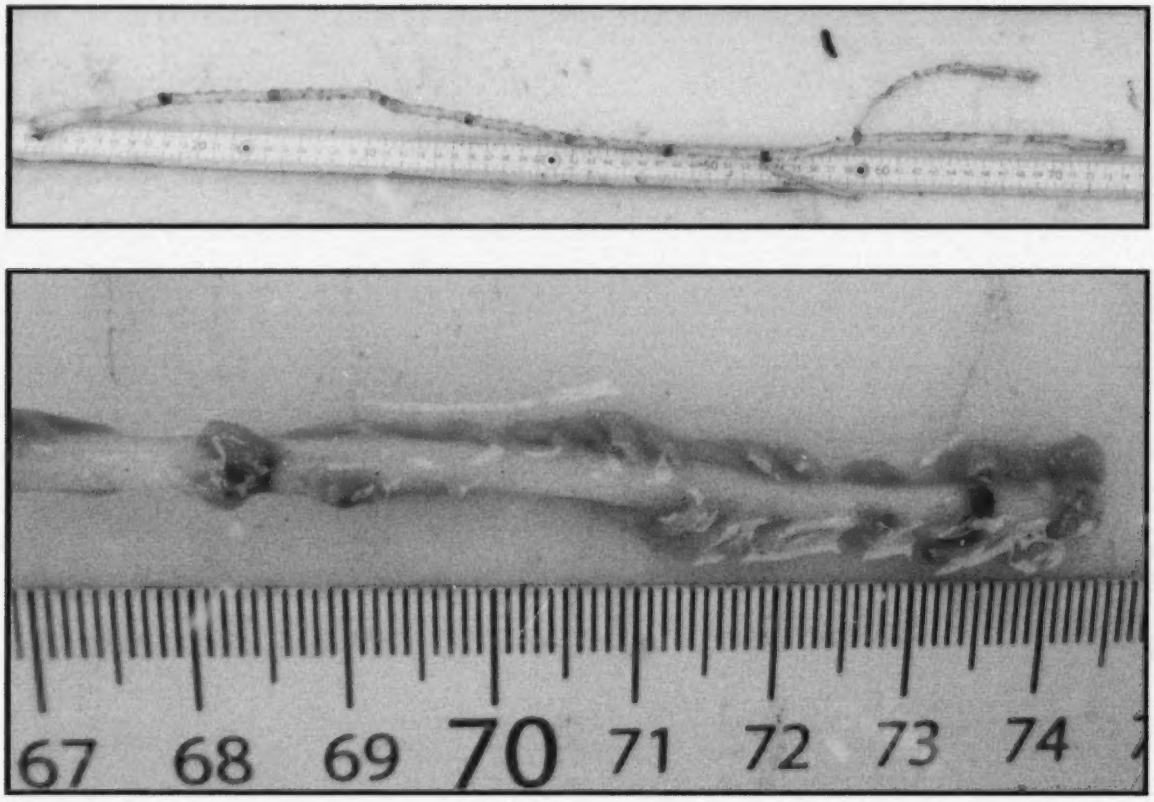


Figure 1: *Isidella sp.*

Name: *Isidella sp.* (Wing & Barnard, 2004).

Description: Skeleton segmented, alternating non-spicular calcareous internodes (white) and horny nodes (black); skeleton branches from horny nodes; internodes 2 to 10 cm; polyps red to orange in colour; polyps non-retractile. (Photo: Archipelago Marine Research Ltd.)

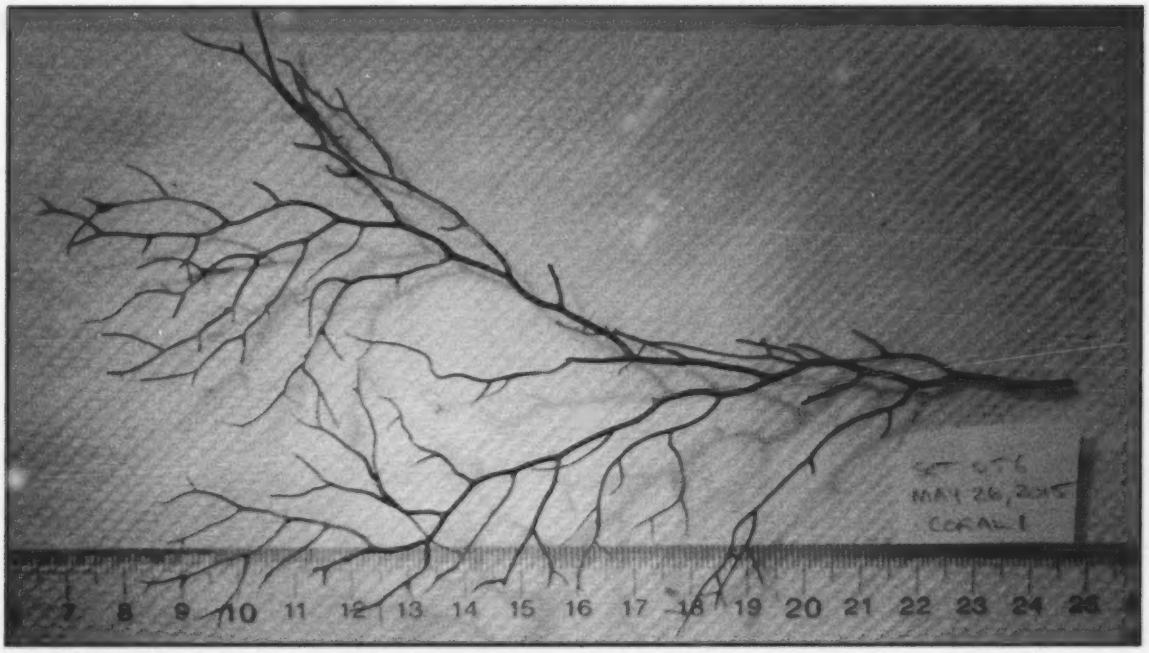


Figure 2: *Parastenella sp.*

Name: *Parastenella sp.* (Cairns, 2007).

Description: Horny skeleton of bushy colony dichotomously branched. (Photo: Archipelago Marine Research Ltd.)

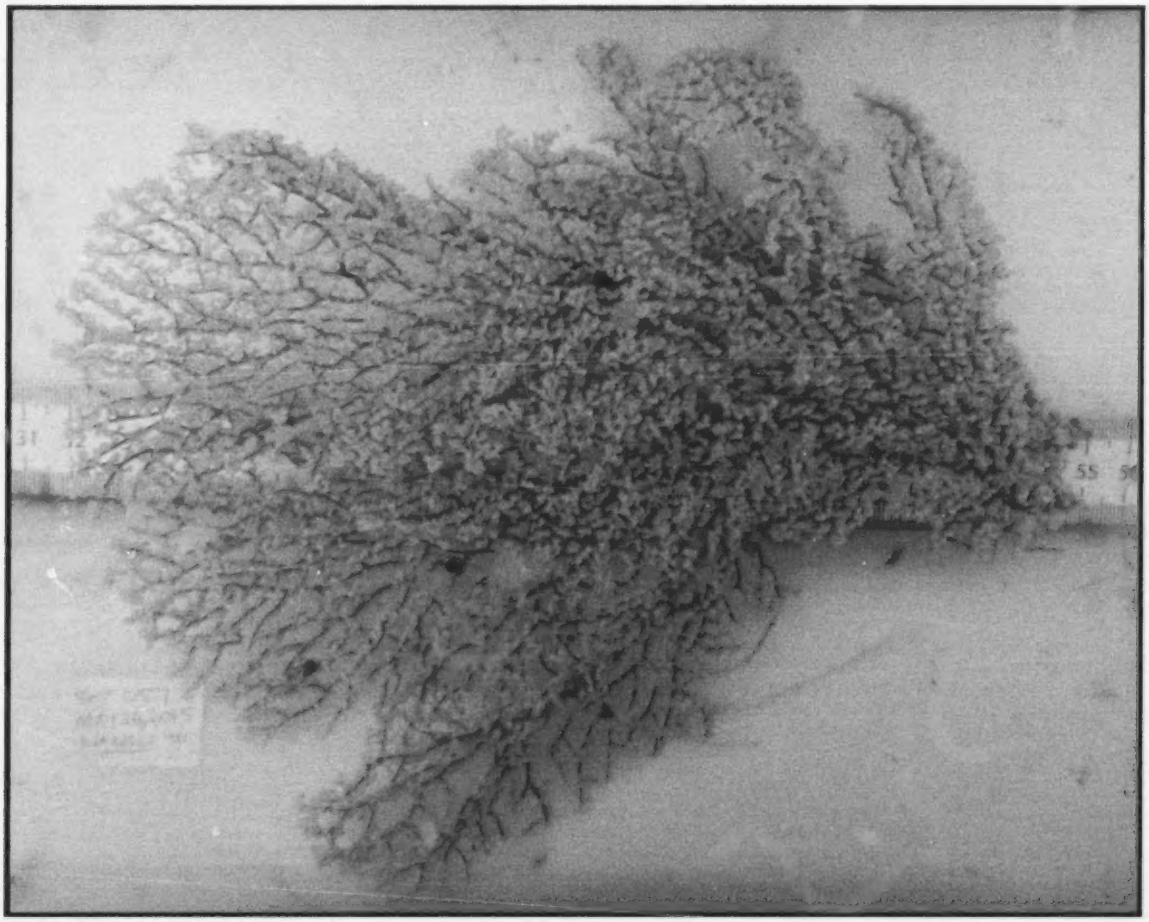
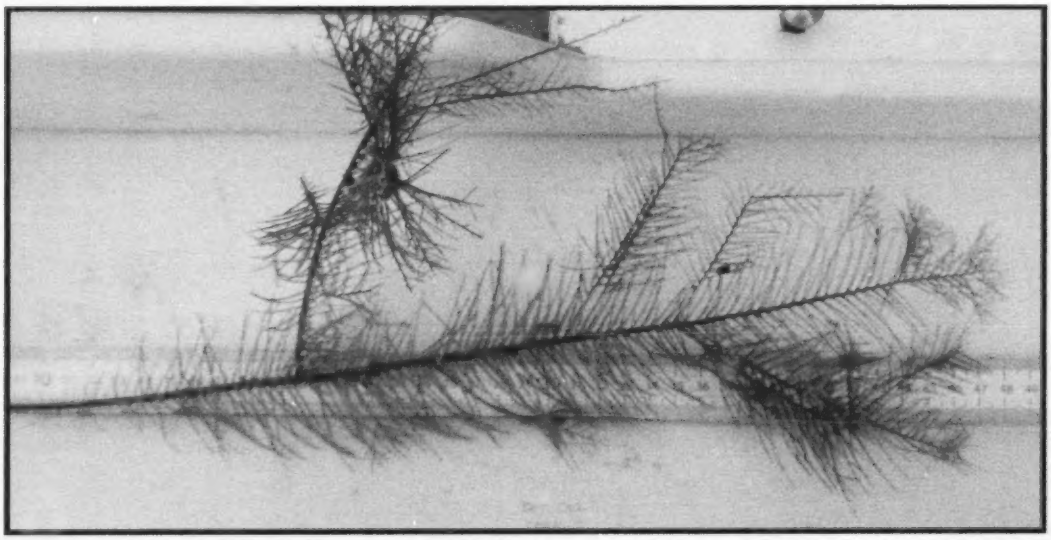


Figure 3: *Parastenella ramosa*

Name: *Parastenella ramosa*, (Cairns, 2007).

Description: Bushy colony dichotomously branched; polyps (<3mm) arranged in pairs or whorls around stem; calyces in singles, pairs and whorls of 3, generally oriented perpendicular to branch or downwards; marginal scales (8) of polyps do not fold over bases of opercular scales, elongated and often fluted; opercular scales alternate with marginal scales, roughly equal in size with highly keeled inner surface. (Photo: Archipelago Marine Research Ltd.)



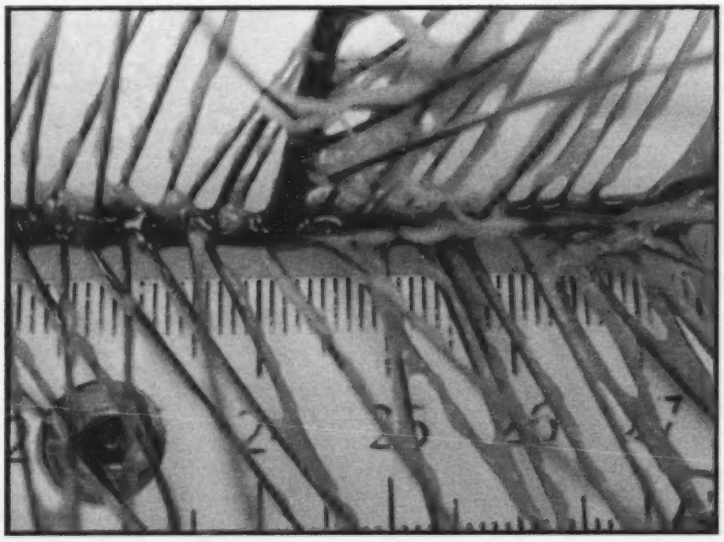


Figure 4: *Parantipathes sp.*

Name: *Parantipathes sp.* (Opresko et. al., 2014).

Description: Colonies bushy or fan-shaped; dendritically branching in one plane; axis spiny, black and horny; polyps transverse diameter between 0.7-3.0mm; spines compressed, triangular or conical, not projecting through surface of polyps; spine surface smooth or slightly papillose and may have one or more bifurcations at apex; typically with 6 or more rows of simple pinnules, with equal number on either side of stem and branches (bottlebrush appearance). (Photo: Archipelago Marine Research Ltd.)

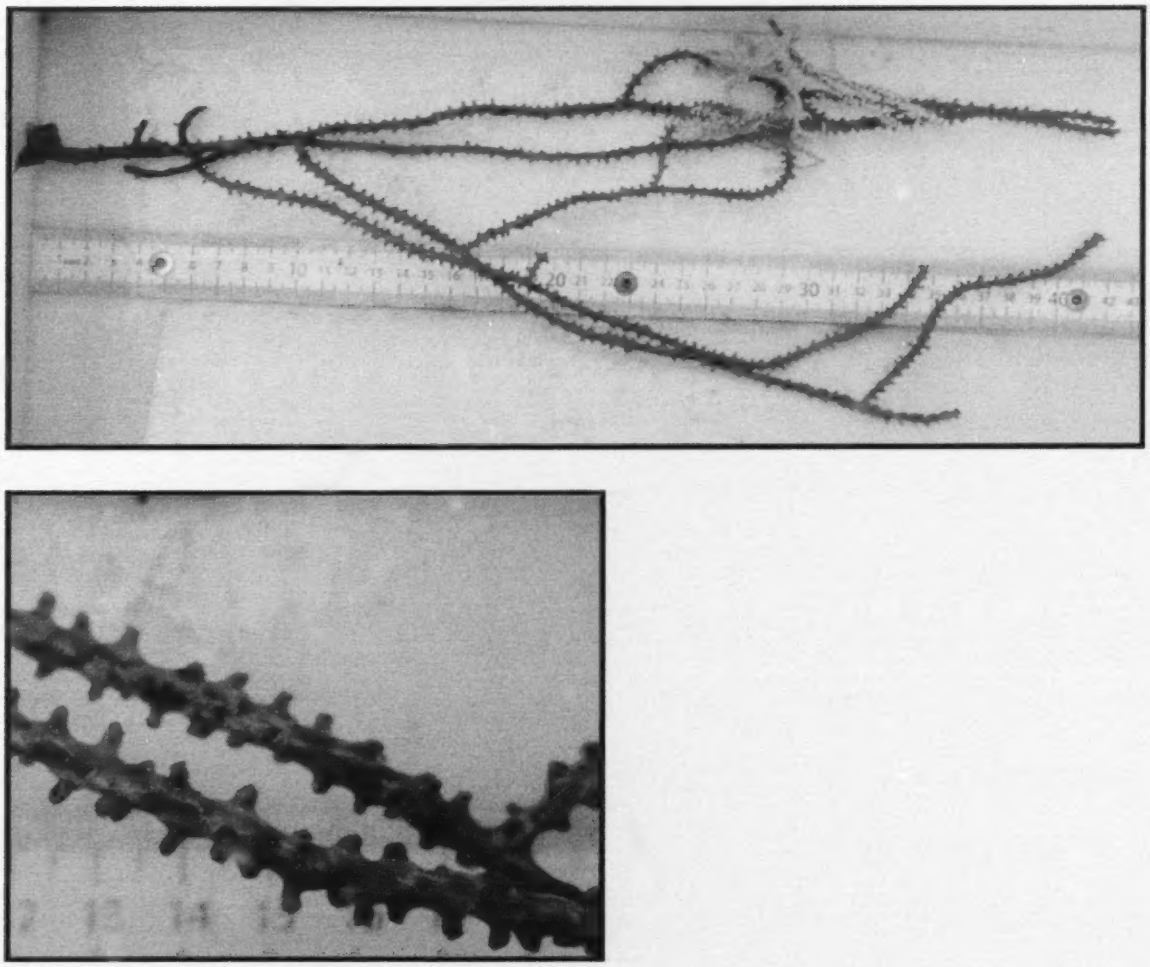
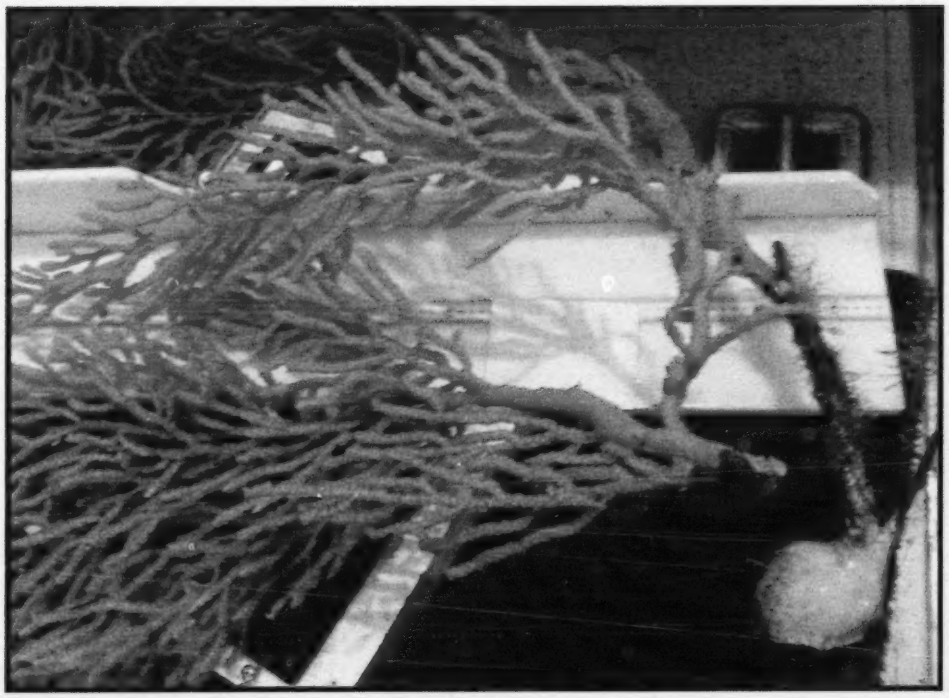


Figure 5: *Swiftia simplex*

Name: *Swiftia simplex* (Wing & Barnard, 2004).

Description: Colony tall and slender with few branches; stem slender and of uniform thickness throughout; calyces small and tubular, uniformly distributed as much as 2mm apart and 1mm high; spicules arranged more or less in chevrons; coenenchyma is thin for this genus; spicules of two sorts: small double spindles, rosettes, stars and small clubs or larger spindles, slender, pointed, often somewhat curved, covered with regularly distributed verrucae; colour brick-red. (Photo: Archipelago Marine Research Ltd.)



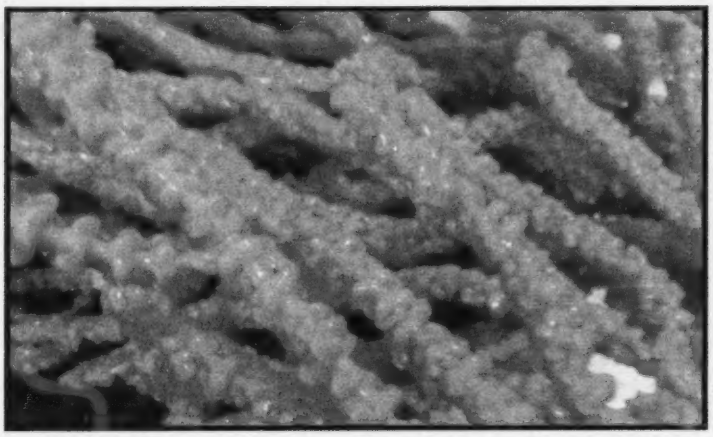


Figure 6: *Primnoa pacifica*

Name: *Primnoa pacifica* (Cairns & Bayer, 2005)

Description: Large tree-like colony dichotomously branched; skeleton may be calcified at the base; live polyps are orange to red; polyps large (>3mm) and face downward; polyps crowded around stem and branches; basal scales of most polyps larger than medial scales and usually with prominent marginal spine. Specimen photographed is from the samples collected from SGaan Kinghlas – Bowie Seamount in May, 2014 (Photo: Archipelago Marine Research Ltd.)

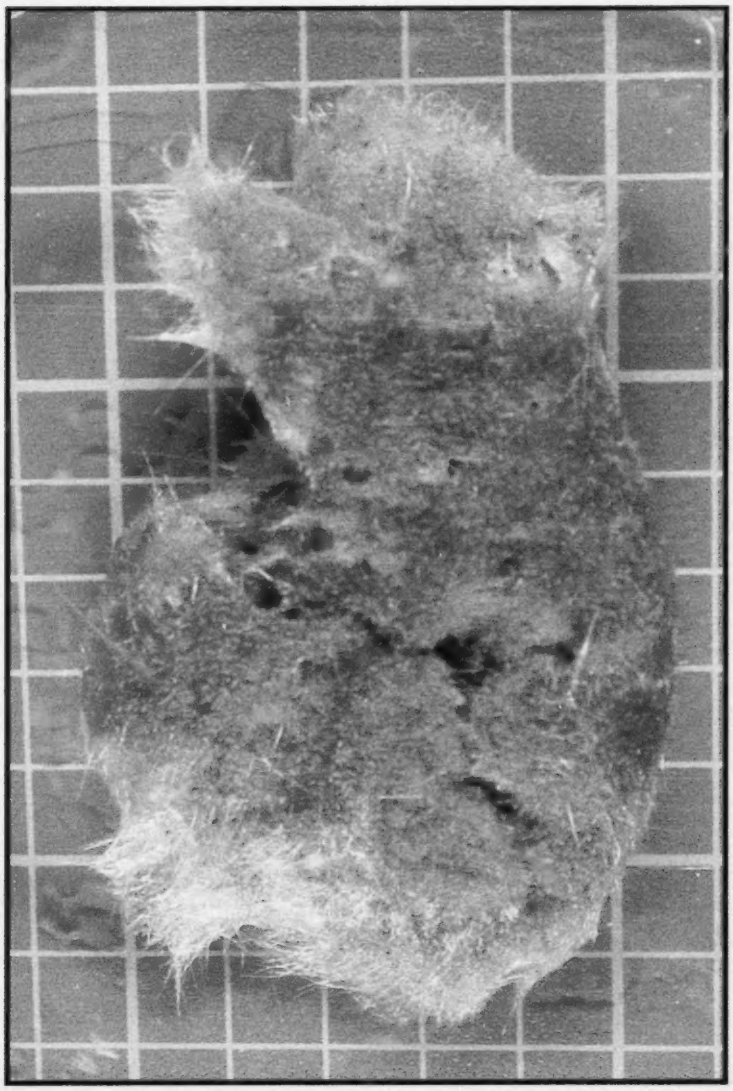


Figure 7: *Aulosaccus schulzei*

Name: *Aulosaccus schulzei* (Stone *et. al.*, 2011).

Description: Vase shaped sponge attaches basally to solid substrate, thickest near its upper end. External surface is smooth, completely lacking large projecting spicules, and lined by a lattice of loose spicules. The internal atrial surface has a network of diactin bundles crossing the exhalent aperatures, but a lattice of atrialia is absent. There is a single large terminal osculum lacking a marginal spicule fringe. Consistency is very soft and easily torn. Height is up to 45 cm, diameter to 22.5 cm, and 34 mm in wall thickness. Colour in life is creamy white. Grids in photograph are 1 cm^2. (Photo: H. Reiswig, RBCM)

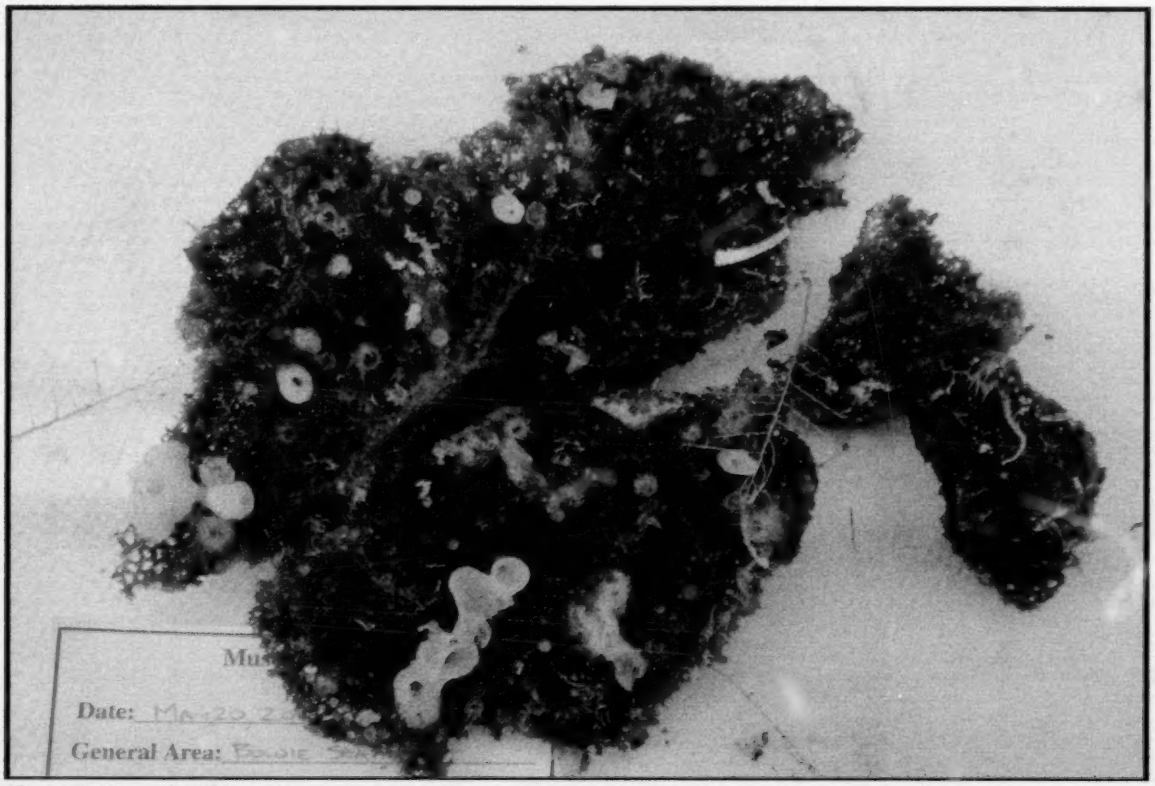


Figure 8: Hexactinellida

Name: Hexactinellida.

Description: Possesses hard, rigid framework characteristic of Class Hexactinellida. Specimen photographed contains a number of juvenile hexactinellids that are white in colour growing on a dead hexactinellid skeleton. Specimen was not submitted for further identification. (Photo: Archipelago Marine Research Ltd.)

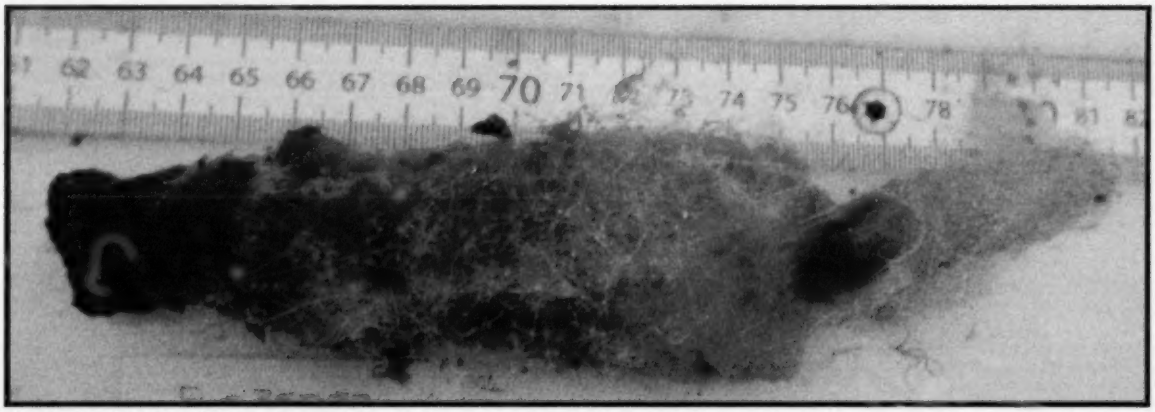


Figure 9: *Rhabdocalyptus dawsoni*

Name: *Rhabdocalyptus dawsoni* (Stone *et. al.*, 2011)

Description: Soft straight or curved tube or barrel-like sac, occasionally partially divided into two or three conjoined tubes. Is usually attached basally to hard substrate. Surface is smooth but usually bearing a 1 cm tall veil of pentactins and diactins which may be clean but usually covered with small epizoans and sediment; large single osculum has a marginal fringe. Consistency is soft and compressible. Height is to 1 m and diameter to 30 cm. Colour in life is white but often coated with sediment, epizoic organisms, and flocculent material, giving it a brown to greenish brown appearance. (Photo: Archipelago Marine Research Ltd.)

Figure 10: *Aphrocallistes vastus*

Name: *Aphrocallistes vastus* (Stone *et. al.*, 2011)

Description: Specimen photographed is dead. Basic form is a hollow, thin-walled cone, but larger, older specimens add lateral mitten-like out-growths becoming highly variable; overall it is similar to *Heterochone calyx* with which it is often confused. Surface is smooth, usually with a large single terminal osculum. Consistency is rigid but brittle. Size is up to 2 m high and 3 m laterally. Colour in life varies from white to light yellow and orange. (Photo: Archipelago Marine Research Ltd.)

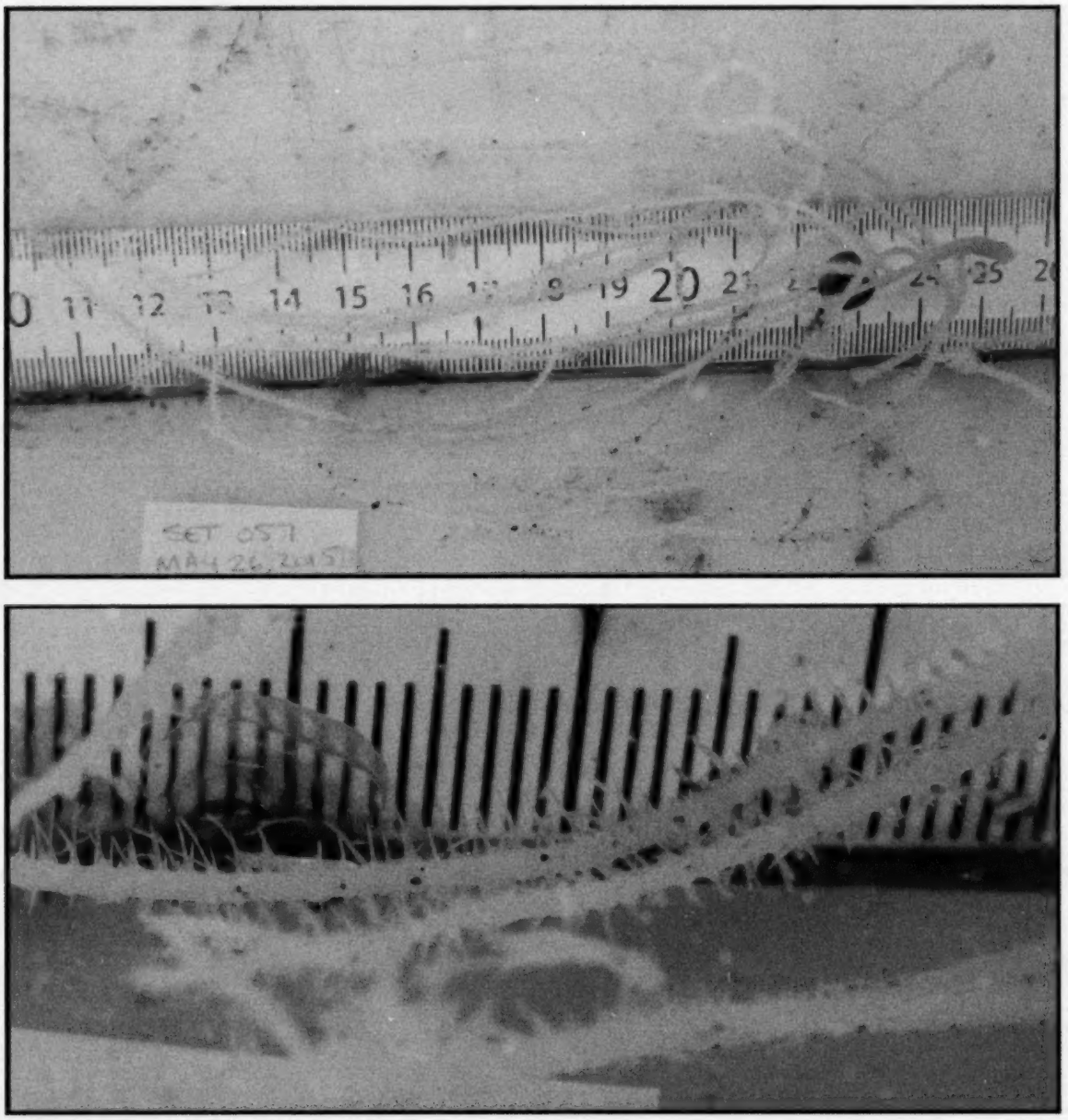


Figure 11: *Asbestopluma sp.*

Name: *Asbestopluma sp.* (Lundsten *et. al.*, 2014)

Description: An arborescent, dichotomously branching sponge with a bottle-brush arrangement of filaments. Sponge is approximately 16 cm tall and 9 cm wide. Branches taper distally. Attached to substrate by a conical holdfast disk. Colour in life is white. (Photo: Archipelago Marine Research Ltd.)

Figure 12: *Farrea aspondyla*

Name: *Farrea aspondyla* (Reiswig & Stone, 2013).

Description: Hexactinellid with a very thin skeleton forming a lace-like mass. Consistency of skeleton is flexible but brittle. (Photo: Archipelago Marine Research Ltd.)